



THE MOVE TO CLEAN FUELS

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My name is Mike Alaimo I am executive director of Clean Fuels Michigan, a trade association built of over 30 companies dedicated to the growth of the clean fuel supply chain in Michigan.

I want to first say special thanks to Rep. Bellino for his interest in this very important issue and to Committee Chair Glenn and members for taking the time to learn about vehicle electrification and the importance of charging infrastructure to Michigan's current and future economy.

The Benefits of Vehicle Electrification

- EVs are three times as efficient as gasoline vehicles: 59%-62% of the electrical energy is converted into power to turn the wheels.
- Their efficiency means that they cost little to "fuel": A typical electric vehicle can travel 43 miles for \$1 worth of electricity. This is about one-fourth of the fuel cost of typical 2016 gasoline-powered cars and SUVs.
- Operational costs are lower. In fact, if you were to take into account the full operating costs of electric vs. gas-powered vehicles, the vehicles are almost competitive.
- **Reduced energy dependence.** Electricity is a domestic energy source. Whether it is generated by natural gas, nuclear, renewables or other sources.
- According to recent study for the coalition Charge Up Midwest--Michigan could have 5.4 million EVs on the road by 2050. Financial Benefits of EV growth? According to the Midwest Evolve study's 2050 levels: **\$2.6 billion in reduced electricity bills**, \$23.1 billion in fuel and maintenance costs, and \$5.7 billion in emission-reduction benefits.

Current/Future State of Electric Vehicles in the U.S. and Michigan

- Michigan has had over 12,700 EV purchases since 2011. Nationally, plug-in electric vehicles (PEVs) and battery electric vehicles (BEVs) total approximately 700,000 cars on the road. Annual sales are expected to exceed 1.2 million by 2025, a 7% share of total annual vehicle sales.
- The increase in vehicle adoption by consumers is due in part to declining battery costs. Batteries costs are one-half of what they were in 2010 — roughly \$150 per kWh — and will come down to

\$50- \$60 per kWh by 2030. “True” cost parity considered at the \$50-\$60 price range which we will see over approximately the next decade.

- According to the Electric Vehicle Charging Association’s 2017 report, there are now 10x more electric vehicle supply equipment (EVSE’s) companies than six years ago— and more than 50,990 public and private plug-in electric vehicle charging sites located throughout the US. However, data also shows that more infrastructure is needed in Michigan to accommodate future market growth.
- **Embracing EVs with the Deployment of Charging Infrastructure is about the economy, state competitiveness and supporting Michigan’s current and future workforce**

Studies Show Increasing Charging Infrastructure Spurs Vehicle Demand

- The National Research on Energy Laboratory (NREL) conducted a case study on Massachusetts to study the possible correlation between access to charging infrastructure and number of PEV consumers . The paper aggregated baseline data from other studies, like density of registered PEV owners per zip code, household travel surveys, and others and applied it to an analysis into optimizing benefits of public charging infrastructure in Massachusetts. The study came to several conclusions that the Commission ought to consider for future plan development. First, it showed a strong correlation between the number of registered PEV owners and number of charging locations, both public and otherwise. The study also found that an increase of benefits from access to charging in long-dwell charging scenarios, such as workplace charging, led to an increase in electric vehicle miles traveled. This suggests that increased access to charging, particularly in regions considered PEV-dense, increases the utilization of EVs. This also represents an interesting challenge- as more EV miles are driven, the need for access in less PEV-dense regions increases over time. It also seems to suggest that allowing the costs of charging to remain low while a market is maturing might be beneficial to its future health. As a market matures, these types of incentives may be less important.
- Real world examples of NREL findings: Kansas City and Georgia

The Market Landscape - Growing Demand, Better Technology

- Consumer base shifts towards cleaner, fuel efficient vehicles.U.S. EV sales have grown an average of 32% annually from 2012-2016 and 45% over the year since June 2017.

What Other States are Doing

- Some of Michigan’s closest neighboring states are aligning resources to support the growth of clean mobility vehicles and technologies
 - Indiana has developed a program called BlueIndy. The public/private venture spurred millions of dollars in investment towards charging infrastructure and electric ride-sharing fleets in the state capital of Indianapolis. The program is now being expanded throughout the state and to other states as well
 - Ohio has developed the Alternative Fueling Infrastructure Incentive, has aligned millions of dollars to encourage businesses to utilize clean transportation, and recently won Federal funding on a bid (which Detroit competed in) named the Smart City Challenge in

which Columbus will become, “the nation's first city to fully integrate self-driving electric vehicles, smart grids, smart streetlights and collision avoidance sensors as part of its transportation system.” see [here](#)

- Illinois has the Smart Grid Infrastructure Development and Support [Program](#), mandates for electric vehicle charging stations at every interstate rest stop, and in addition has appropriated more than \$10 million in [capital funding](#) for EV manufacturing and infrastructure grants and loans.
- Additionally, the U.S has 10 states with ZEV mandates which account for 28 percent of new-vehicle registrations in the U.S. last year, according to IHS Automotive data.

Global Policies Accelerating Growth

- Countries with policies banning gas/diesel or accelerating the move towards clean vehicles is currently [over half](#) of the global market for vehicle sales.
 - [China](#) - World's largest market, phase out of gas/diesel vehicles and aggressively incentivizing EVs to target 12% of sales by 2020
 - [India](#) - Total phase out of gas/diesel vehicles by 2030
 - [France](#) - Total phase out of gas/diesel vehicles by 2040
 - [Britain](#) - Total phase out of gas/diesel vehicles by 2040
 - Austria, Norway, Denmark, Germany, Ireland, Japan, the Netherlands, Portugal, Korea and Spain have set official targets for electric car sales.

Automakers response to changes in policy and consumer demand:

Nearly every major automaker has committed to producing electric vehicles in the near future. These commitments are a response to the change in consumer demands and policies listed above.

- [GM](#)- 20 new all electric by 2023. GM's CEO Mary Barra also announced this past week that it would increase production of its popular battery-electric Chevy Bolt, built in Orion, MI.
- [Ford](#)- 13 new electrified vehicles by 2020s with focus on high-volume SUV/truck sales
- [Chrysler](#) - electrified versions of half its' vehicle fleet by 2022
- [Nissan/Mitsubishi](#) - 12 new all electric by 2022
- [Honda](#) - electrified all new european models in 2018, ¾ new car sales electrified by 2030
- [Tesla](#) - currently all electric models, half of sales in U.S., 4th largest automaker by value
- [Volvo](#) - electrifying all new models starting 2019
- [Volkswagen](#) - electric versions of all of its vehicles by 2030
- [Daimler/Mercedes Benz](#) - 10 new electric vehicles by 2022, \$11B investment in development
- [Toyota](#) - phase out of all gas engines by 2040
- [U.S.](#) - some studies show 90% of new car sales electric by 2040s
- **The Convergence of Autonomous, Connected and Electric-** Accelerated innovation and development of autonomous vehicle technology with broad industry consensus that self-driving vehicles will be electric (see [here](#) and [here](#))

“So why will our autonomous future likely be an electric one? First are the regulatory reasons, namely gas mileage requirements. Then there are

engineering reasons; electric vehicles are easier for computers to drive. And, of course, ride-hailing services will increasingly make up a higher percentage of daily miles driven, and it will be easier, cheaper and safer to recharge an unmanned car than to gas one up.” - Greg Gardner, Detroit Free Press

- With two autonomous vehicle testing and development centers located in the state, Michigan has shown early on that the next generation of mobility technologies are an important part of the state’s economic future. However, states like Ohio and Indiana are quickly becoming hotbeds for autonomous vehicle deployment because they have done more to invest in electric vehicle charging infrastructure.
- Vehicle electrification is seen by industry experts as the backbone of autonomous and connected vehicle technologies and necessary for the development of the advanced mobility marketplace.
- The need for massive investment in autonomous, connected and electric mobility technologies to compete in a rapidly changing global market, coupled with plateauing demand for traditional vehicles, underlines the need for Michigan to lead in developing a marketplace for vehicle electrification to support the state’s future workforce and economy.

The Detroit News

Electric vehicles can boost state

Mike Alaimo Published 10:46 p.m. ET Nov. 23, 2017

Global markets are shifting dramatically toward electric vehicles (EVs), and advancements in connected and self-driving vehicle technology are driving development. As the automotive industry evolves, the need for highly skilled workers in manufacturing, engineering and computer programming will increase. That industry growth will take place where pro-business EV policies are in place.

Here in the auto capital, Michigan stands to benefit greatly from developing a marketplace for next generation mobility. The transition is already underway. Two of our largest automakers, Ford and General Motors, recently announced massive expansions in EV development and production. Ford is assembling a team of experts called "Team Edison" to take electric vehicle development to the next level. It is also poised to roll out 13 new EV models over the next five years. GM, already a strong force in the EV sector, will introduce two new EV models in 2023, expanding its fleet to 22 and strengthening its commitment to a zero-emissions future. Like Ford, GM is increasingly transitioning its workforce toward electric vehicle development and production. The automaker recently created a new position titled vice president of global electric vehicle programs, which will help the company continue expanding development of EVs.

In the regulatory sphere, the Michigan Public Service Commission is taking steps to move the needle on electric vehicle regulation. The commission recently announced it is developing pilot programs for electric vehicle charging infrastructure and will be taking input from the public on how the pilots should be structured.

Utility companies will also play a critical role in the expansion of electric vehicles in Michigan. Ensuring there are enough charging stations in place in the right areas is essential. Consumers will not purchase EVs unless they have certainty there are enough charging stations around the state to keep their cars running. Our electricity should be affordable, and with the right policies in place, vehicle electrification can make the grid more efficient and lead to lower rates. Utility companies and the Public Service Commission will have to work together to set up a rate structure that is beneficial to drivers and the electric grid.

Clean Fuels Michigan believes maintaining our state's position as auto capital of the world depends on a clean mobility strategy. Proper planning and policies will drive down costs and keep Michigan competitive in the rapidly shifting global market, while improving our environment. Thirty-seven states across the country have pro-business policies in place for alternative fuel vehicles. Michigan is not one of them. Our state is home to the highest concentration of automotive engineers, and we currently produce more cars and trucks than any other state. Decision-makers need to support policies that will spark growth of the clean fuels marketplace to help businesses grow and spur further investment. We should make Michigan a leader on EVs instead of allowing those investment dollars to go elsewhere.

Mike Alaimo is executive director of Clean Fuels Michigan